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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/562,139

**Applicant(s)**

OOE, YASUHIKO

**Examiner**

RENE TOWA

**Art Unit**

3736

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-7,9-11,13 and 14 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-7,9-11,13 and 14 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 December 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/S6108)  
Paper No(s)/Mail Date 12/23/05.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application.
- 6) ☐ Other: \_\_\_\_.

## DETAILED ACTION

### *Priority*

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

### *Claim Objections*

2. **Claims 1-4, 11 & 13-14** are objected to because of the following informalities:

In regards to claim 1, at line 8, insert --and-- between "symmetrical" and "arranged."

Appropriate correction is required.

### *Claim Rejections - 35 USC § 103*

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. **Claims 1-2** are rejected under 35 U.S.C. 103(a) as being unpatentable over Cheah (US 5,428,902) in view of Ogawa et al. (US 5,774,996), and further in view of Krausman et al. (US 6,095,991).

In regards to **claim 1**, **Cheah** disclose(s) a device for generating an electrical signal corresponding to a change in posture comprising:

(a) a container 15 which is tightly fixed to an electrode holder 17 in which a fluid dielectric 29 is sealed with a volume ratio sufficient to have an angle of inclination with respect to a free surface of the fluid dielectric 29 (see fig. 1);

(b) a plurality of pairs of peripheral electrodes (21, 23, 25, 27) disposed at positions in such a way that each of said plurality of pairs of peripheral electrodes (21, 23, 25, 27) are symmetrical and arranged perpendicular to the electrode holder 17 in respect of a central point of a cross section of the container so as to be apart from an inner peripheral surface of the container 15 with a predetermined interval therefrom (see col. 3, lines 59-68; col. 4, lines 1-19); and

(c) a counter electrode 26, which is perpendicular to an upper surface of the electrode holder 17, serving as a bottom of the container 15, or perpendicular to a lower surface of a ceiling part of the container, characterized in that an external voltage is applied to the counter electrode so that an electrical signal corresponding to a change in posture can be generated. (see col. 5, lines 11-23).

*Cheah discloses a device, as described above, that fails to explicitly teach a container which is formed from electrical insulating material and is tightly fixed to an electrode holder formed of an electrical insulating material; Cheah also fails to teach a device comprising a pair of counter electrodes.*

However, **Ogawa et al.** disclose a device for generating an electrical signal corresponding to a change in posture comprising a container 26 which is formed of an electrical insulating material and is tightly fixed to an electrode holder 27 formed of an electrical insulating material (see figs. 3 & 5; col. 4, lines 15-28 & 34-38).

Moreover, **Krausman et al.** disclose a device for generating an electrical signal corresponding to a change in posture comprising a pair of counter electrodes (i.e. common electrodes), being electrically insulated from each other, which are opposed

each other along an imaginary line perpendicular from a central point of the cross section of the container (i.e. spherical glass envelope), each of said pair of counter electrodes (i.e. common electrodes) being perpendicular to an upper surface of the bottom of the container, or perpendicular to a lower surface of a ceiling part of the container (i.e. spherical glass envelope), characterized in that an external voltage is applied to the pair of counter electrodes so that an electrical signal corresponding to a change in posture can be generated (see abstract; see figs. 3A-B; col. 4, lines 39-57).

Since Ogawa et al. provide a device that can be made simple and cheap to manufacture (see col. 4, lines 34-38), it would have been obvious to one of ordinary skill in the art at the time Applicant's invention was made to provide the device of Cheah with a container which is formed from an electrical insulating material and is tightly fixed to an electrode holder formed of an electrical insulating material as taught by Ogawa et al. in order to provide a device that can be made simple and cheap to manufacture.

Similarly, it would have been obvious to one ordinary skill in the art at the time Applicant's invention was made to provide the device of Cheah as modified by Ogawa et al. with a pair of counter electrodes as taught by Krausman et al. in order to successively monitor the combination of the peripheral electrodes with each common electrode to determine the orientation/position of the device.

In regards to **claim 2**, it would have been obvious to one of ordinary skill in the art at the time Applicant's invention was made to provide the device of Cheah as modified by Ogawa et al. and Krausman et al. with counter electrodes that have a flat surface since such a modification would amount to a mere design choice. For example,

the device of Cheah as modified by Ogawa et al. and Krausman et al. would be expected to function equally well with either the counter electrodes that are pin shaped or counter electrodes that have a flat surface. Moreover, it has previously been held that merely changing aesthetic design is not patentable—See *In re Seid*, 161 F.2d 229, 231, 73 USPQ 431, 433 (CCPA 1947).

5. **Claims 3-4 & 13-14** rejected under 35 U.S.C. 103(a) as being unpatentable over Cheah (US 5,428,902) in view of Ogawa et al. ('996), Krausman et al. ('991), and further in view of Ogawa et al. (US 5,930,907).

*Cheah as modified by Ogawa et al. and Krausman et al. disclose a device, as described above, that fails to explicitly teach peripheral electrodes that extend from the ceiling and the bottom, respectively, of the container, and has a nonconductive portion.*

However, **Ogawa et al. ('907)** teach that it is known to provide peripheral electrodes 3 that extend from the ceiling and the bottom, respectively, of a container 1 (see fig. 1; col. 3, lines 44-58).

It would have been obvious to one of ordinary skill in the art at the time Applicant's invention was made to provide the device of Cheah as modified by Ogawa et al. ('996) and Krausman et al. with peripheral electrodes that extend from the ceiling and the bottom, respectively, of a container as taught by Ogawa et al. ('907) since such a modification would amount to a mere design choice. For example, the device of Cheah as modified by Ogawa et al. and Krausman et al. would be expected to function equally well with either the electrodes extend from the ceiling and bottom as claimed or extending solely from the bottom as long as the electrodes emerges beyond the fluid.

6. **Claims 5-6** are rejected under 35 U.S.C. 103(a) as being unpatentable over Cheah ('902) in view of Ogawa et al. ('996), Krausman et al. ('991), and further in view of Thompson (US 5,233,984).

*Cheah as modified by Ogawa et al. and Krausman et al. disclose a device, as described above, that fails to explicitly teach a spherical container comprising arcuate surface.*

However, **Thompson** teaches that it is known to use a plurality of electrodes having a geometric shape that is adapted to the shape of the container (see figs. 1-2; col. 6, lines 28-34); wherein the container may have a spherical shape (see col. 6, lines 17-21).

In regards to **claim 5**, it would have been obvious to one of ordinary skill in the art at the time Applicant's invention was made to modify the electrodes and container of Cheah as modified by Ogawa et al. ('996) and Krausman to include a spherical container as taught by Thompson and an arcuate surface as claimed in order to adapt the electrodes to the geometric shape of the container.

Similarly, in regards to **claim 6**, since Thompson suggests a container having flat electrode with a multi-sided shape to measure axial position along the surfaces of the multi-sided container, it would have been obvious to one of ordinary skill in the art at the time Applicant's invention was made to modify the electrodes and container of Cheah as modified by Ogawa et al. ('996), Krausman and Thompson to include a polygonal container with flat electrodes in order to measure axial position along the surfaces of the polygonal container.

7. **Claims 5-6** are rejected under 35 U.S.C. 103(a) as being unpatentable over Cheah ('902) in view of Ogawa et al. ('996), Krausman et al. ('991), and further in view of Doty (US 2,936,411).

*Cheah as modified by Ogawa et al. and Krausman et al. disclose a device, as described above, that fails to explicitly teach a spherical container comprising arcuate surface.*

However, **Doty** teaches that it is known to use a plurality of electrodes (20, 21, 22) having a curved geometric shape that is adapted to the shape of the container; wherein the container may have a spherical shape (see figs. 1-2).

In regards to **claim 5**, it would have been obvious to one of ordinary skill in the art at the time Applicant's invention was made to modify the electrodes and container of Cheah as modified by Ogawa et al. ('996) and Krausman to include a spherical container and an arcuate surface as taught by Doty in order to adapt the electrodes to the geometric shape of the container.

Similarly, in regards to **claim 6**, it would have been obvious to one of ordinary skill in the art at the time Applicant's invention was made to modify the electrodes and container of Cheah as modified by Ogawa et al. ('996), Krausman and Doty to include a polygonal container with flat electrodes in order to measure axial position along the surfaces of the polygonal container.

8. **Claim 7** is rejected under 35 U.S.C. 103(a) as being unpatentable over Cheah (US 5,428,902) in view of Ogawa et al. ('996), Krausman et al. ('991), and further in view of Kita et al. (US 6,825,751).



*Cheah as modified by Ogawa et al. and Krausman et al. disclose a device, as described above, that fails to explicitly teach frequency modulation corresponding to the inclination of the container is provided for a carrier wave generated by a high frequency oscillator, and this signal is subjected to FM demodulation.*

However, **Kita et al.** teach that it is known to provide an electrical-signal generating means for outputting a voltage corresponding to a difference in an developing electrostatic capacity ascribable to a difference in an area of contact with the fluid dielectric between at least one pair of electrodes to which the voltage is applied in the container in which the fluid dielectric with a volume less than a content volume of the container is accommodated, frequency modulation corresponding to the inclination of the container is provided for a carrier wave generated by a high frequency oscillator 1372, and this signal is subjected to **FM** demodulation (see col. 24, lines 50-67; col. 25, lines 1-25; col. 26, lines 30-65).

It would have been obvious to one of ordinary skill in the art at the time Applicant's invention was made to provide the device of Cheah as modified by Ogawa et al. ('996) and Krausman et al. with a frequency modulation corresponding to the inclination of the container is provided for a carrier wave generated by a high frequency oscillator 1372, and this signal is subjected to **FM** demodulation as taught by Kita et al. in order to detect and transmit the tilt angle of the device.

9. **Claims 10-11** are rejected under 35 U.S.C. 103(a) as being unpatentable over Cheah (US 5,428,902) in view of Ogawa et al. ('996), Krausman et al. ('991), and further in view of Meyer (US 4,206,401).

*Cheah as modified by Ogawa et al. and Krausman et al. disclose a device, as described above, that fails to explicitly teach means for obtaining as an electrical signal a change in electrostatic capacity corresponding to an amount of insertion or pulling-out displacement between the hollow conductor and the conductor coated with the electrical insulating material.*

However, **Meyer** discloses a pair of the devices (Cm, Cr) for generating an electrical signal corresponding to a change in posture; wherein the device are respectively attached to both ends or spaced-apart midway portions of a device for generating an electrical signal corresponding to a change in position which comprises a hollow conductor (Cm, Cr), a conductor 3 fitted in the hollow conductor (Cm), the conductor 3 being linearly displaceable, means 11 for applying a voltage across the hollow conductor (Cm, Cr) and the conductor 3, and means 10 for obtaining as an electrical signal a change in electrostatic capacity corresponding to an amount of insertion or pulling-out displacement between the hollow conductor (Cm, Cr) and the conductor 3 (see abstract; see figs. 1-3).

It would have been obvious to one of ordinary skill in the art at the time Applicant's invention was made to provide the device of Cheah as modified by Ogawa et al. and Krausman et al. with a pair of devices for generating an electrical signal corresponding to a change in posture with a hollow conductor and a conductor as taught by Meyer in order to measure the relative displacement of the conductor.

Similarly, it would have been obvious to one of ordinary skill in the art at the time Applicant's invention was made to provide the device of Cheah as modified by Ogawa

et al., Krausman et al. and Meyer with a conductor that is coated with an electrical insulating material as claimed in order to prevent short-circuiting between the hollow conductor and the conductor.

### ***Conclusion***

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

US 3,290,786 to Parkin discloses an attitude sensing apparatus.

US 6,249,984 to Barsky et al. discloses an electrolytic tilt sensor having a metallic envelope.

US 3,487,303 to Remington discloses a device for sensing deviation from the vertical position.

US 5,726,359 to Zeller et al. discloses an orientation sensor, especially suitable for use in an underground boring device.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to RENE TOWA whose telephone number is (571)272-8758. The examiner can normally be reached on M-F, 8:00-16:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Max Hindenburg can be reached on (571) 272-4726. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/R. T./  
Examiner, Art Unit 3736

/M. H./  
Supervisory Patent Examiner, Art Unit 3736